



AGREEMENT BETWEEN ELECTRONIC CLINICAL DATSETS FOR CHLAMYDIA AND GONORRHEA IN THE MILITARY HEALTH SYSTEM

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MILITARY MEDICAL SURVEILLANCE

- Reportable disease surveillance
 - Triservice guidelines, outlining case definitions and data elements
 - Navy – 80+ reportable events
 - Medical Event Reports (MERs)
- Passive: Local medical units required to report
 - Burden falls upon local “public health”
- Reporting varies between commands
- Completeness: 35-40% for hospitalizations

MILITARY AND CIVILIAN

- Some similarities
 - Same challenges with passive reporting
 - Similar structure (local, state, federal)
- Several key differences
 - IT infrastructure: secure, updated OS
 - Operational platforms w/o internet/computer
 - Military Health System (MHS)
 - One administrative tracking system for care provided in a fixed Military Treatment Facility

ROOM FOR IMPROVEMENT?

- Electronic clinical data can enhance passive surveillance systems
 - Get more timely information
 - Increase case finding; completeness of reporting
 - Automatically track trends
- Existing datasets in the Military Health System (MHS) can improve surveillance in a similar manner
 - Reliability of these datasets has not been established

PURPOSE

- To begin examining reliability of existing data sources in the MHS to improve medical surveillance in the military

EXISTING DATASOURCES

- Current Medical Event Reporting (MER) system
 - Purpose: surveillance
- ICD-9-CM coded clinical billing records
 - Purpose: billing of clinical services
 - Inpatient and outpatient
- Laboratory Results recorded in the Composite Healthcare System
 - Purpose: tracking of lab orders and results

OBJECTIVES

- To evaluate agreement between the three data sources
- To try to understand
 - Reliability of ICD-9-CM coding
 - Usability of laboratory results data
 - Completeness of MERs

METHODS

- Population: Navy and Marine Corps Active Duty and Beneficiaries
- Study Area: large metro; 4 major hospital facilities and associated clinics
- Study Period: 1 January 2001 to 1 July 2002
- Medical Events: Gonorrhea and Chlamydia
 - defined by the Tri-service RME guidelines
- Duplicate records excluded: within 30 days of initial record

METHODS

- Agreement between data sources was tested using two methods:
 - Timeless Method: Datasets were matched on a unique personal identifier
 - 7-Day Method: Datasets were matched on the unique personal identifier as well as date (+/- 7 days)
 - Date of encounter (SADR/SIDR)
 - Date of report (MER)
 - Date of order (lab)

Preliminary Results

**Proportion of pos lab results (gonorrhea=546;
Chlamydia=2991) matching each dataset**

| Disease- Method | MER N(%) | Outpatient N(%) | Inpatient N(%) |
|------------------------------|---------------------|----------------------------|---------------------------|
| Gonorrhea Timeless Method | 251(46.0) | 141(25.8) | 2(0.4) |
| Chlamydia Timeless Method | 975(32.6) | 470(15.7) | 0 |
| Gonorrhea 7-Day Method | 52(9.5) | 79(14.5) | 2(0.4) |
| Chlamydia 7-Day Method | 166(5.5) | 142(4.7) | 0 |

**Proportion of MERs (gonorrhea=419;
Chlamydia=1082) matching each dataset**

| Disease- Method | Outpatient N(%) | Inpatient N(%) | Lab N(%) |
|------------------------------|----------------------------|---------------------------|---------------------|
| Gonorrhea Timeless Method | 60 (14.3) | 0 | 251 (59.3) |
| Chlamydia Timeless Method | 180 (16.6) | 0 | 975 (90.1) |
| Gonorrhea 7-Day Method | 20 (4.7) | 0 | 52 (12.4) |
| Chlamydia 7-Day Method | 102 (9.4) | 0 | 166 (15.3) |

**Proportion of outpatient records (gonorrhea=238;
Chlamydia=588) matching each dataset**

| Disease- Method | MER N(%) | Inpatient N(%) | Lab N(%) |
|------------------------------|---------------------|---------------------------|---------------------|
| Gonorrhea Timeless Method | 60(25.2) | - | 141(59.2) |
| Chlamydia Timeless Method | 180(30.6) | - | 470(80.0) |
| Gonorrhea 7-Day Method | 20(8.4) | - | 79(33.2) |
| Chlamydia 7-Day Method | 102(17.3) | - | 142(24.2) |

**Proportion of inpatient records (gonorrhea=4;
Chlamydia=0) matching each dataset**

| Disease- Method | MER N(%) | Outpatient N(%) | Lab N(%) |
|------------------------------|---------------------|----------------------------|---------------------|
| Gonorrhea Timeless Method | 0 | - | 2(50.0) |
| Chlamydia Timeless Method | 0 | - | 0 |
| Gonorrhea 7-Day Method | 0 | - | 2(50.0) |
| Chlamydia 7-Day Method | 0 | - | 0 |

CONCLUSIONS/DISCUSSION

- Datasets do not match well by time
- Some datasets match well independent of time
 - Indicative of clinical practice?
- Suggesting
 - Might be useful in trending over time
 - Unclear as to effectiveness for case finding

CONCLUSIONS/DISCUSSION

- Outpatient and MERs independent of time
 - High % of MERs had supporting pos labs
 - High % of outpatient records had supporting pos labs
 - However, MERs and outpatient records did not match well
 - **each data source may be capturing different cases of the disease
 - **a combination of the two may accurately reflect trends

CONCLUSIONS/DISCUSSION

- MER
 - Completeness of reporting may be less than optimal
 - Reliability of the data is high
 - Valuable source of public health surveillance and monitoring
- SADR:
 - ICD-9-CM coding appears to be reliable
 - 1/3 to 1/4 of records showed agreement with labs on time
- Labs: high % did not match with other datasets
 - Why?

STUDY LIMITATIONS

- Outpatient/inpatient and lab data limited to services provided at the military facilities
- Lab data is not standardized
 - Risk of not capturing all positive labs
- MER data searched on date of report
 - date of illness onset is not well populated

FUTURE WORK

- Test agreement between all three data sources (lab, SADR, MERs)
- Expand study to other geographic areas to ensure validity
- Investigate high number of positive labs not matching other datasets

UNRESOLVED THOUGHTS?

- How can these results help us do surveillance better?
- Each data source has own strengths and limitations
- No one data source = gold standard
- Previous study suggests different results for less common diagnoses
 - low agreement between data sources
- Perhaps automated surveillance should not be the end goal

Acknowledgements

- AMSA
- TMA
- This study was partially funded by a grant from the Department of Defense Global Emerging Infections and Response System

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